APRIL/MAY 2023

CACS32/BACS32 — STATISTICAL METHODS AND THEIR APPLICATIONS I

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Write the scope of statistical methods.

2. How do you find n^{th} percentile of a sample?

3. What are the uses of geometric mean and Harmonic mean?

4. Give the relation between Mean and Mode.

5. A sample of five accounting graduates revealed the following starting salaries. 22000, 28000, 31000, 23000 and 24000. Find the Range and coefficient of range.

6. Find the mean deviation for 23, 34, 56, 32, 34, 67.

7. What is skewness?

8. How to relate skewness and kurtosis?

9. What is called correlation?

10. List the need of Regression and Analysis.

SECTION B — ($5 \times 5 = 25$ marks)

Answer ALL questions.

11. (a) The table shows the heights of trees in a region. Draw a histogram

Height of trees	No. of trees
60-65	3
65-70	3
70-75	8
75-80	10
80-85	5
85-90	2

Or

(b) What are the different methods of representing statistical data? Explain each with example.

12. (a) The weights of students of a certain class are given below. 39, 42, 47, 38, 42, 40,42 38, 43, 42, 38, 44, 46, 39, 42, 40, 43, 42, 41. Find the Arithmetic mean, median, and mode.

Or

19. The first four central moments of a distribution are 0, 2.5, 0.7 and 18.75. Examine the Skewness and kurtosis of the distribution.

20. The following data gives indices of industrial production and number of registered unemployed people (in lakh). Determine Karl Pearson's correlation

Year	Index of production	Number Unemployed
1991	100	15
1992	102	12
1993	104	13
1994	107	11
1995	105	12
1996	112	12
1997	103	19
1998	99	26

(b) The runs scored by Sachin in 5 test matches are 140, 153, 148, 150 and 154 respectively. Find the mean, mode and geometric mean.

13. (a) Coefficient of variation of 2 series is 60% and 80% respectively. Their standard deviations are 20 and 16 respectively, What is their AM.

Or

(b) From the following data calculate Range and coefficient of range.

Marks	0-10	10-20	20-30	30-40	40-50	50-60
No. of students	10	20	30	50	40	30

14. (a) Calculate Karl-Pearson's coefficient of skewness for the given data

$X = 12, 22, 24, 44, 8, 18, 22, 35$

Or

(b) Compute the Kelly's coefficient of skewness from the following data:

height (in inches)	Number of persons
58	10
59	18
60	30
61	42

62	35
63	28
64	16
65	8

15. (a) Calculate Spearman's Rank correlation coefficient between advertising cost and sales from the following data:

Advertisement Cost ('000 Rs.)	39	65	62	90	82	75	25	98	36	78
Sales (lakhs)	47	53	58	86	62	68	60	91	51	84

Or

(b) Consider the following set of points: {(-2, 1), (1, 2) , (4, 2), (3,5), (4,6)}

(i) Find the least square regression line for the given data points.

(ii) Plot the given points and the regression line in the same rectangular system of axes.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Calculate Quartile-3, Deciles-7, Percentiles-20 from the following grouped data

Class	Frequency
3-5	4
5-7	5
7-9	3
9-11	2

17. Calculate Geometric mean, Harmonic mean from the following grouped data

X	Frequency
10	3
11	12
12	18
13	12
14	3

18. Calculate Variance, Standard deviation Coefficient of Variation from the following grouped data

X	Frequency
0	1
1	5
2	10
3	6
4	3